REMARKS

The present application was filed on November 10, 1999 with claims 1-20. New claims 21-29 were added in an Amendment dated September 30, 2003. In an Amendment dated March 31, 2004, Applicants amended independent claims 1, 19 and 20 to further clarify the subject matter of the invention.

In the outstanding Office Action, the Examiner: (i) rejected claims 1-13 and 15-20 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,649,060 to Ellozy et al. (hereinafter "Ellozy") in view of U.S. Patent No. 6,166,733 to Yamada (hereinafter "Yamada"); (ii) rejected claims 8 and 9 under 35 U.S.C. §103(a) as being unpatentable over Ellozy in view of Yamada in further view of U.S. Patent No. 5,794,249 to Orsolini et al, (hereinafter "Orsolini); (iii) rejected claim 14 under 35 U.S.C. 103(a) as being unpatentable over Ellozy in view of Yamada in further view of "well known art;" and (iv) rejected claims 21-29 "under the same rationale" as claims 1-19.

Applicants incorporate by reference herein the remarks from their previous Amendments dated September 30, 2003 and March 31, 2004 (hereinafter "previous responses").

Regarding the rejection of independent claims 1, 19 and 20 under 35 U.S.C. §103(a) based on Ellozy and Yamada, Applicants respectfully assert that the combination of Ellozy and Yamada fails to teach or suggest all of the limitations in said claims, for at least the reasons presented below.

Applicants have previously set out the deficiencies in Ellozy in their previous responses. It is assumed that the Examiner acknowledges such deficiencies and thus has combined Ellozy with the newly-cited Yamada reference. However, Applicants assert that Yamada fails to remedy the deficiencies of Ellozy.

The present invention, for example, as recited in independent claim 1, is directed toward a method of processing audio-based data associated with a particular language. The method comprises the steps of: (i) storing the audio-based data; (ii) generating a textual representation of the audio-based data, the textual representation being in the form of one or more semantic units corresponding to the audio-based data, wherein a semantic unit comprises a minimal unit of language having a semantic meaning; and (iii) indexing the one or more semantic units and storing the one or more

indexed semantic units for use in searching the stored audio-based data in response to a user query (underlining added for emphasis). Claims 19 and 20 recite similar features.

Again, as pointed out in Applicants' background section (e.g., pages 1 and 2 of the present specification), Ellozy is a <u>word</u>-based indexing system and in such <u>word</u>-based indexing systems, before the searching can be started, a vocabulary and a language model based on known words must be prepared. Thus, by definition, there are always words that are unknown to the system. Unfortunately, the searching mechanism can only work with words resulting in a good language model score, i.e., known words. Also, for most of the Asian languages, including, e.g., Chinese, Japanese, Korean, Thai, and Vietnamese, word boundaries neither exist in printed form, nor in computer text files. Thus, <u>word</u>-based indexing and searching methods can not be applied to these languages. Thus, the invention proposes an indexing and searching approach that is not <u>word</u>-based but rather is <u>semantic unit</u>-based, as is recited in the claims.

As stated in the present specification at page 2, lines 15-21, <u>semantic units</u> are defined as small, preferably the smallest, units of a language that are known to have semantic meaning. Examples of semantic units that may be used are <u>syllables</u> or <u>morphemes</u>. Independent claims 1, 19 and 20 were previously amended to expressly recite that <u>a semantic unit comprises a minimal unit of language having a semantic meaning</u> in a sincere effort to further distinguish the semantic unit-based techniques of the claimed invention from the word-based techniques of Ellozy.

Ellozy does not disclose indexing or searching based on <u>semantic units, wherein a semantic unit comprises a minimal unit of language having a semantic meaning</u>, as expressly recited in the claimed invention. Indexing and searching in Ellozy is clearly based on <u>words</u> only, e.g., see steps 740 and 750 of FIG. 7 ("storing index words," "comparing index and recognized words"). This is also made abundantly clear at column 7, lines 13-20 ("indexing is done . . . by choosing key words or phrases").

At page 3 of the present Office Action, the Examiner acknowledges that Ellozy "does not explicitly teach wherein a semantic unit comprises a minimal unit of language having a semantic meaning." However, the Office Action goes on to state that "this is a well known feature in the art

as evidenced by Yamada who teaches at col. 4, lines 45 to col. 5, lines 9, indexing a Chinese/ Japanese index based on syllable."

However, while Yamada mentions syllables, Yamada is still a <u>word-based</u> index and search system. As col. 4, lines 4-9 explain, a syllable in Yamada is used merely for sorting keywords. That is, the keywords that are used to actually search a database are sorted and displayed based on syllables. Thus, once the keywords are sorted and displayed based on syllables (or numbers), a user is able to more efficiently select the keyword for a record search. Then, as explained at col. 6, lines 12-19, a record is retrieved from a database corresponding to the selected keyword.

Thus, even if combined with Ellozy, the combination of Yamada and Ellozy still fails to teach or suggest all of the limitations in independent claims 1, 19 and 20. That is, the combination fails to teach or suggest "generating a textual representation of the audio-based data, the textual representation being in the form of one or more semantic units corresponding to the audio-based data, wherein a semantic unit comprises a minimal unit of language having a semantic meaning, and indexing the one or more semantic units and storing the one or more indexed semantic units for use in searching the stored audio-based data in response to a user query."

That is, while the claimed invention indexes the one or more semantic units and stores the one or more indexed semantic units for use in searching the stored audio-based data in response to a user query, even if Yamada were combined with Ellozy, syllables are not indexed and stored for use in searching a database in response to a user query in the combination. The syllables from Yamada are used merely to sort keywords such that a keyword can be more efficiently selected and used to search a database. In fact, the Office Action at page 3 appears to acknowledge that Yamada would merely "facilitate sorting" of keywords in a word-based system that includes the teachings of Ellozy.

For at least the above reasons, Applicants respectfully assert that independent claims 1, 19 and 20 are patentable over the combination of Ellozy and Yamada. Also, not only due to their dependence on claim 1, but also because such claims recite patentable subject matter in their own right, Applicants respectfully assert that dependent claims 2-13 and 15-18 are patentable over the

Ellozy/Yamada combination. Withdrawal of the §103(a) rejection is therefore respectfully requested.

Regarding the rejection of claims 8 and 9 under 35 U.S.C. §103(a) based on Ellozy in combination with Yamada and Orsolini, Applicants respectfully assert that such rejection is deficient for at least the reasons given above with respect to independent claim 1. Also, claims 8 and 9 recite patentable subject matter in their own rights. In fact, again, the Office Action at page 4 appears to acknowledge that Orsolini does not index and search based on semantic units, but rather "the user chooses a keyword . . . [which is then] used to query the text balanced tree for each recording" (col. 5, lines 28-43).
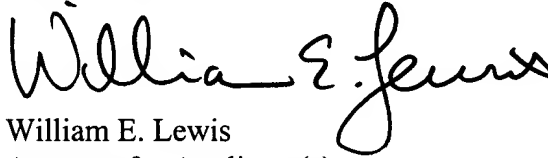
Regarding the rejection of claim 14 under 35 U.S.C. §103(a) based on Ellozy in combination with Yamada and "well known art," Applicants respectfully assert that such rejection is deficient for at least the reasons given above with respect to independent claim 1. Also, claim 14 recites patentable subject matter in its own right. Further, it is unclear what authority the Examiner is relying on in rejecting claim 14 based on a contention that the claimed feature of "one or more semantics units . . . [being] indexed according to speaker attributes" is "well known in the art." If the Examiner is relying on the taking of Official Notice, it should be so stated, and Applicants request citation of one or more examples properly supporting the rejection.

Also, specifically regarding claims 21-29, Applicants again find no rationale in the Office Action for rejecting such claims other than a summary statement at page 5 that the claims are "the same scope and content as claims 1-19 and therefore are rejected under the same rationale." This is an insufficient rejection if for no other reason that the claims contain subject matter that further limits the content of independent claim 1. However, the Office Action does not specifically address this subject matter.

Withdrawal of the various §103(a) rejections is therefore respectfully requested.

In view of the above, Applicants believe that claims 1-29 are in condition for allowance, and respectfully request favorable reconsideration.

Respectfully submitted,

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